

Research on the Coupling and Coordinated Development of Tourism Industry and Rural Revitalization under the New Pattern of "Double Cycle" Development

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Abstract

Under the new pattern of "double-cycle" development, the tourism industry is facing a new opportunity for development, and Rural Revitalization is the key to expanding domestic demand to build a domestic cycle system, and there is a synergistic effect between the two. This paper selects the panel data of Anhui Province from 2001 to 2020, and uses entropy method to construct the evaluation system of tourism industry and rural revitalization respectively. And through the coupling coordination degree model to measure the degree of coordinated development between the two. The results show that the coupling coordination degree between tourism industry and rural revitalization in Anhui Province shows an upward trend on the whole, the coupling degree is from weak to strong, and the overall level of comprehensive development is higher.

Keywords

Double cycle; Tourism Rural revitalization; Entropy method; Coupling coordination degree.

1. Literature Review

Rural development has a special status in the "double cycle". Rural revitalization is an important support for the realization of domestic and international double cycle, and tourism industry is an important driving force for rural revitalization. How to promote rural revitalization through the development of tourism industry and the economic effects brought by the coordinated development of the two has become the focus of attention.

Domestic scholars have conducted in-depth research on the coordinated development between tourism industry and rural revitalization, such as Tang Jing's research on the coupling and coordination relationship between rural revitalization and rural tourism based on the panel data of Xuancheng City, Anhui Province, from 2015 to 2019.^[1]; Fang Kun made a coupling analysis of the development level of leisure agriculture and tourism in Guangxi Province.^[2]; Taking Liangshan Yi Autonomous Prefecture as an example, Liu Yuxiang and others studied the comprehensive development level of Rural Revitalization and cultural tourism industry.^[3]; Bi Mingyan and others evaluated the role and impact of the coupling development of rural tourism and precise poverty alleviation.^[4]; Du Yan and others studied the coupling and coordination relationship between rural tourism and rural revitalization in 17 cities of Shandong Province and the main influencing factors.^[5].

2. Study Design

2.1. Variable selection

Based on the existing research and combined with the existing data, this paper constructs the evaluation index system of tourism industry and rural revitalization. Six indicators were

selected from different levels for tourism industry and rural revitalization.^[6]The data needed in this paper are mainly from the Statistical Yearbook of Anhui Province.

System	Indicators	Weight Coefficient(w)
Rural revitalization	Gross regional product	0.1663
	Gross output value of agriculture	0.1418
	Per capita cultural and entertainment consumption expenditure of rural residents	0.2102
	General public budget expenditure	0.1725
	Per capita disposable income of rural residents	0.1875
	Engel's coefficient	0.1217
Tourism industry	Number of star-rated hotels	0.0985
	Number of travel agencies	0.1007
	The number of tourists received in the year	0.2511
	Total tourism revenue	0.2714
	Domestic per capita tourism consumption	0.0898
	Proportion of total tourism revenue to GDP	0.1884

2.2. Model setting

Entropy method

The first step is to normalize the data of each index:

$$z = \frac{x - x_{\min}}{x_{\max} - x_{\min}}$$

Among, x_{\min} represents the minimum value, x_{\max} represents the maximum value.

The second step is to calculate that weight of each index by adopting an entropy method:

$$P = \frac{z}{\sum_{i=1}^n z}$$

$$E = -\frac{1}{\ln n} \sum_{i=1}^n P \ln P$$

$$W = \frac{1 - E}{m - \sum E}$$

Where E is the entropy value of each index.

The third step is to calculate the comprehensive evaluation index U1 and U2 of the two systems of rural revitalization and tourism industry respectively.

$$U = \sum_{i=1}^n wz$$

Coupling coordination degree model

$$C = \sqrt{\frac{U_1 U_2}{(U_1 + U_2)^2}} \quad C \in [0,1]$$

$$T = \alpha U_1 + \beta U_2$$

$$D = \sqrt{C \times T}$$

Among them, C is the coupling degree, T is the comprehensive evaluation index of the coupling coordination development level, and D is the coupling coordination degree.

3. Analysis of Results

The index data of Anhui Province from 2001 to 2020 are calculated by the above model, and the results are as follows:

Year	U1	U2	Degree of coupling(C)	Coordination Index(T)	Coupling coordination degree(D)	Degree of coupling coordination
2001	0.12	0.01	0.533	0.065	0.186	Severe maladjustment
2002	0.11	0.04	0.884	0.075	0.258	Moderate disorder
2003	0.11	0.05	0.927	0.080	0.272	Moderate disorder
2004	0.14	0.09	0.976	0.115	0.335	Mild disorder
2005	0.15	0.12	0.994	0.135	0.366	Mild disorder
2006	0.15	0.14	0.999	0.145	0.381	Mild disorder
2007	0.18	0.18	1.000	0.180	0.424	On the verge of disorder
2008	0.23	0.23	1.000	0.230	0.480	On the verge of disorder
2009	0.23	0.27	0.997	0.250	0.499	On the verge of disorder
2010	0.28	0.31	0.999	0.295	0.543	Barely coordinated
2011	0.35	0.41	0.997	0.380	0.615	Primary coordination
2012	0.38	0.49	0.992	0.435	0.657	Primary coordination
2013	0.42	0.52	0.994	0.470	0.684	Primary coordination
2014	0.50	0.56	0.998	0.530	0.727	Intermediate coordination

Year	U1	U2	Degree of coupling(C)	Coordination Index(T)	Coupling coordination degree(D)	Degree of coupling coordination
2015	0.55	0.64	0.997	0.595	0.770	Intermediate coordination
2016	0.60	0.62	1.000	0.610	0.781	Intermediate coordination
2017	0.67	0.73	0.999	0.700	0.836	Good coordination
2018	0.74	0.80	0.999	0.770	0.877	Good coordination
2019	0.84	0.89	1.000	0.865	0.930	Quality coordination
2020	0.88	0.49	0.959	0.685	0.810	Good coordination

3.1. Comprehensive Evaluation Index Analysis

From the coordination index, it can be seen that the comprehensive evaluation index (T) of the coordinated development of tourism industry and rural revitalization in Anhui Province has increased significantly, from 0.065 in 2001 to 0.865 in 2019, an increase of more than 13 times. Specifically, from 2001 to 2020, the comprehensive evaluation index U1 of Rural Revitalization in Anhui Province has been on the rise, indicating that the overall level of Rural Revitalization in Anhui Province is better. The comprehensive evaluation index of the tourism industry has also been on the rise from 2001 to 2019, but due to objective factors, there is a significant decline in 2020.

According to the relationship between the comprehensive evaluation index U1 of Rural Revitalization and the comprehensive evaluation index U2 of tourism industry, it can be divided into: from 2001 to 2007, $U1 > U2$, at this time, the development level of Rural Revitalization is ahead of the tourism industry, showing a lagging type of tourism industry; In 2008, $U1 = U2$, at this time, the level of Rural Revitalization is equal to the tourism industry, which shows the steady development of Rural Revitalization and tourism industry. 2009-2019, $U1 < U2$, At this time, the development level of tourism industry is ahead of Rural Revitalization, which is manifested as the lagging type of Rural Revitalization.^[7]; Due to force majeure in 2020, no analysis will be made here. Generally speaking, the level of Rural Revitalization and development in Anhui Province needs to be further improved at this stage.

3.2. Analysis of coupling coordination degree

From the perspective of coupling degree, except in 2001, the overall distribution of coupling degree between Rural Revitalization and tourism industry in Anhui Province from 2002 to 2020 is between $0.8 < C \leq 1$, and the coupling stage is highly coupled at this time, which indicates that Rural Revitalization and tourism industry are developing with high quality and have high correlation, that is, the coupling system reaches the best state.

From the perspective of coupling coordination degree, the coupling coordination degree between Rural Revitalization and tourism industry in Anhui Province showed a steady increase from 2001 to 2020, and the coupling coordination value increased from 0.186 to 0.930, indicating that the coordination degree between them tended to be good year by year. According to the development trend, it can be divided into three stages:

The first stage is from 2001 to 2010, the coupling coordination degree between Rural Revitalization and tourism industry is in the stage of serious imbalance to reluctant coordination, and the overall coupling coordination degree is low.

The second stage is from 2011 to 2016. The coupling coordination degree between Rural Revitalization and tourism industry is in two stages of primary coordination and intermediate coordination. The coordinated development of tourism industry and Rural Revitalization has achieved initial results, and achieved a leap in different stages of coupling coordination degree.

The third stage is from 2017 to 2020. On the whole, the coupling coordination between Rural Revitalization and tourism industry is in a good coordination stage, of which 2019 is a high-quality coordination, 2020 is a good coordination stage with fluctuations, and the overall level of coordinated development is relatively high.

4. Conclusions and Recommendations

4.1. Conclusion

Based on the data of rural revitalization and tourism industry in Anhui Province from 2001 to 2020, this paper first defines the weight of each index by entropy method, and then constructs a coupling coordination degree model according to the comprehensive evaluation index of rural revitalization and tourism industry to reveal the synergistic effect between them. The conclusions of the study are as follows:

(1) From the perspective of comprehensive development level, the Rural Revitalization and the development of tourism industry in Anhui Province showed a steady growth from 2001 to 2020, that is, they played a role in promoting the growth of GDP in Anhui Province. Specifically, the comprehensive evaluation index of the two shows a steady upward trend. From this point of view, with the strong support of the strategic policy of Rural Revitalization and the rapid development of the tourism industry. The Rural Revitalization of Anhui Province has achieved remarkable results.

(2) From the perspective of coupling coordination degree, the coupling degree and coupling coordination degree of tourism industry and rural revitalization in Anhui Province from 2001 to 2019 are in an overall growth state, except for a significant decline in 2020, the two subsystems have a very high level of coordinated development on the whole.

4.2. Proposal

Based on the research results, in order to make the coupling coordination between Rural Revitalization and tourism industry in Anhui Province higher and accelerate the development, the following suggestions are put forward according to the specific requirements of Rural Revitalization policy and tourism industry development:

(1) Under the background of the new pattern of "double cycle" development, the tourism industry is facing greater opportunities for development. At the same time, as an important industry choice for rural revitalization, Anhui Province should integrate existing tourism resources, formulate tourism quality routes according to local conditions, form rural tourism industry with specific themes, attach importance to the upgrading and optimization of tourism industry, increase the scale of investment in tourism industry, and promote rural tourism. Promote the integration of agriculture and tourism.

(2) Anhui Province should strengthen the implementation of Rural Revitalization in the light of the current situation of Rural Revitalization. From the above analysis results and the actual situation, although the tourism industry in Anhui Province has greatly promoted the development of rural revitalization, the initiative of rural revitalization to the tourism industry is obviously insufficient. Therefore, Anhui Province needs to promote the work of rural

revitalization in an all-round way. Increase the coordinated development of Rural Revitalization and tourism industry, and promote the rapid development of Rural Revitalization.

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